

State of Washington **RiskMAP** Business Plan - 2011



RiskMAP
Increasing Resilience Together



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Shorelands and Environmental Assistance Program
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This business plan was prepared by the Washington State Department of Ecology for the Federal Emergency Management Agency under a Cooperating Technical Partners (CTP) grant to provide RiskMAP program management and mapping functions.

WA State Business Plan History

Version Number	Version Date	Purpose	Author
Version 1	April 2005	Five-year Plan	WA State Dept. of Ecology
Version 2	January 2006	Update	WA State Dept. of Ecology
Version 3	August 2007	Update	WA State Dept. of Ecology
Version 4	September 2008	Update	WA State Dept. of Ecology
Version 5	October 2009	Update	WA State Dept. of Ecology
Version 6	December 2010	RiskMAP Plan	WA State Dept. of Ecology
Version 7	January 2012	Update	WA State Dept. of Ecology

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I. Executive Summary

The purpose of this business plan is to outline what resources the State of Washington Department of Ecology (Ecology) will provide to FEMA to meet RiskMAP goals and demonstrate how Ecology's resources will achieve the objectives of RiskMAP. This business plan includes a brief background, Ecology's vision and role in the program, the transition to RiskMAP, a scope of work, a LiDAR acquisition plan, and examples of State projects designed to support the RiskMAP program. New methods for generating new Flood Insurance Studies will rely heavily on risk assessments, data update needs, available terrain data, presence of endangered species, and State and local contributions. Ecology's RiskMAP Business Plan intends to address these methods and contribute to successful RiskMAP applications.

Background

Ecology has supported FEMA in the management of Map Modernization (Map Mod) since its inception by providing statewide coordination and expertise to the modernization effort. 2009 marked the end of Map Mod and the transition into FEMA's RiskMAP (Mapping Assessment, and Planning) Program which builds on the foundation of Map Mod.

Under the FY 2011 State Cooperating Technical Partner grant, Ecology will continue to support program management activities carried out under previous years of Map Mod. Ecology will continue with the new emphasis placed on enabling communities to communicate hazards beyond insurance policies and claims to comprehensive risk assessments and better integration of risk information into local and State mitigation plans, emergency response, and land use planning.

Introduction

Ecology's RiskMAP Program is designed to communicate flood hazard mapping data and additional multi-hazard information to increase public awareness that leads to action and reduces risk to life and property.

Timeline

The period of performance is from October 1, 2011 through September 30, 2012, continuing nearly ten years of CTP partnerships. The grant may not be extended unless there is approval from FEMA Region X.

RiskMAP Vision

The RiskMAP vision is to constantly reduce losses to life and property.¹ Flood mapping is used for² risk assessments which are incorporated into³ mitigation plans where risk reduction measures are identified for⁴ future action. RiskMAP will identify, assess, & communicate multi-hazard risks with non-regulatory products and assessments.

State Role

Ecology is partnering with FEMA to implement the four fundamental strategies to RiskMAP in Washington State. Ecology will dedicate expertise in mapping, GIS, GPS, IT systems, project management, and budget and administration capacities. In FY2011, Ecology will perform program management activities and Technical Guidance activities as described in the CTP guidance tables below:

Activity	Task Descriptions
Program Management	<p>Program management is the active process of managing multiple projects which need to meet or exceed pre-defined performance metrics. Integration and communication are key aspects of program management. The following are tasks that are associated with this activity:</p> <ul style="list-style-type: none">• State and Local Business Plans and/or updates (required)• Managing Technical Mapping Activities (required where technical activities are funded)• Outreach• Providing training to State and Local Officials• Staffing• Pilot Projects (as defined by the FEMA Regional Office)• Mentoring• Minimal Map Panel Printing (up to \$5,000 – must not be covered under another FEMA grant program already)• Coordinated Needs Management Strategy (CNMS) data collection/population• Mitigation Planning Technical Assistance• Training

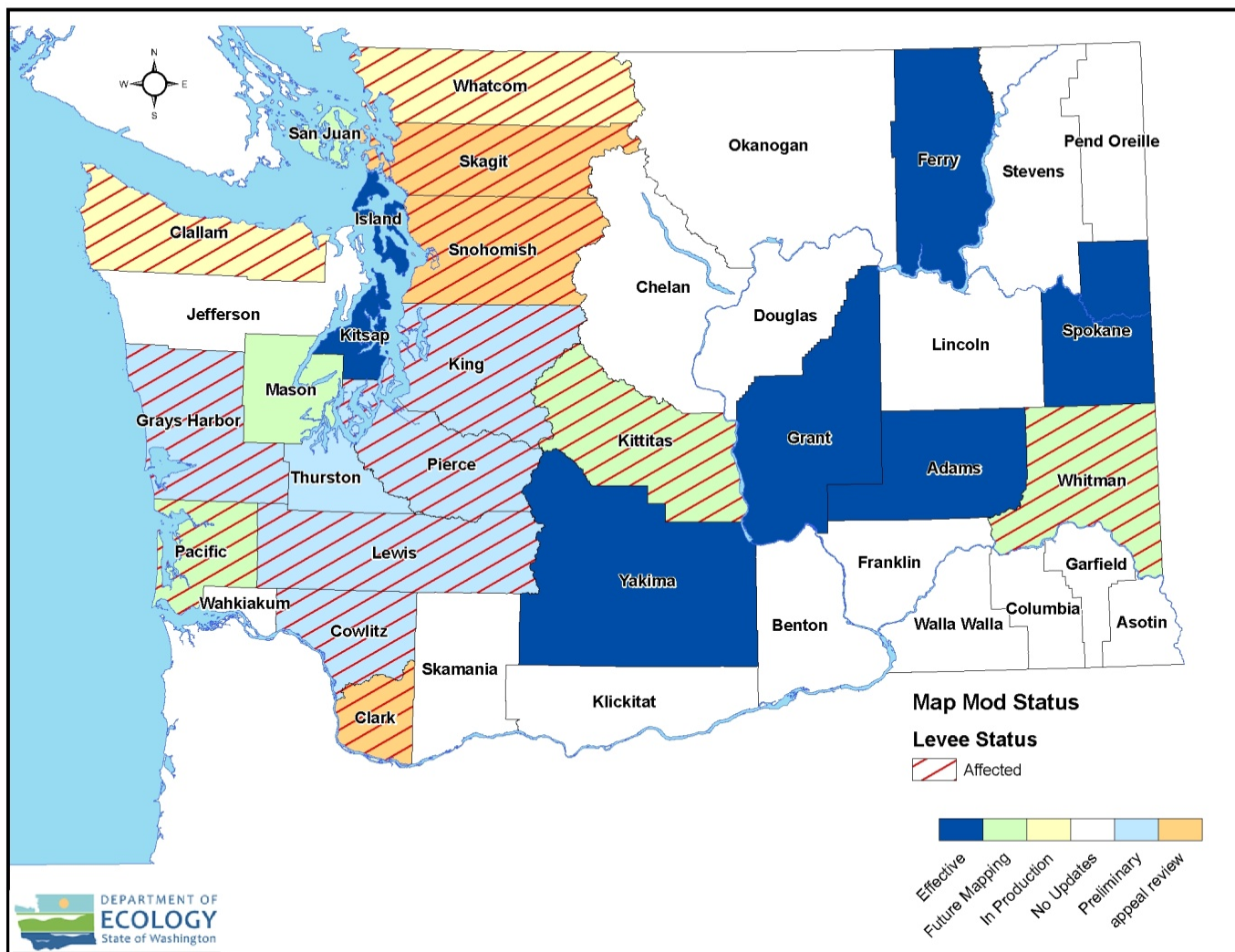
Tasks	Descriptions
Discovery	The objective of Discovery is to engage communities, understand the communities' watershed needs, and inform the purpose of FEMA's engagement, balance FEMA resources and plan project execution. Up to 10 percent of the total estimated funding may be provided to do discovery.
Outreach (up to 10%)	Up to 10 percent of the total estimated funding may be provided to perform outreach activities that directly support the mapping project.
Digital Topographic Data Development	The CTP develops digital topographic data for flood hazard identification purposes.
Risk MAP Non-regulatory Products	Risk MAP non-regulatory products must be included with Risk MAP projects. See appropriate guidance documents for specific activities and requirements.

II. Map Modernization to RiskMAP

Ecology will continue to support ongoing updates to FEMA floodplain mapping and risk reduction efforts. In support of effective implementation of floodplain regulations and flood hazard reduction, Ecology's Floodplain Management Program is partnering through this transition from Map Mod to the RiskMAP program. The status of Map Mod projects is tabled below:

Map Modernization Countywide Project Status

Project Name	STAGE	STATUS	Date
Clallam Co.	Prelim	On-Hold per levee policy	
Clark Co. Revised Prelim	Reviewing appeals	Projected LFD date	1/17/2012
Cowlitz Co.	Prelim	Mailed (Actual)	8/12/2011
Grays Harbor Co.	Prelim	Mailed (Actual)	8/5/2011
King Co. Revised Prelim	Appeal Period	On-Hold per levee policy	
Lewis Co.	Appeal Period	On-Hold per levee policy	
Pierce Co. Revised Prelim	BFE Publication	Waiting Federal Register	
Skagit Co. Post Prelim	Reviewing appeals	Appeal Period Ended	3/31/2011
Snohomish Co.	Reviewing appeals	On-Hold per levee policy	
Thurston Co.	Comment review	LFD projected	2/16/2012
Whatcom Co. Sumas R PMR	Prelim	On-Hold per levee policy	
Yakima Co. Ahtanum PMR	Prelim	Mailed (Actual)	10/14/2011
Yakima Co. Wide Hollow PMR	Projected	LFD	1/17/2012
Whatcom Co.	Mapping	On-Hold per levee policy	



III. RiskMAP Activities

Ecology's Floodplain Management Program is actively pursuing activities and elements of RiskMAP to advance the technical information and expertise of future floodplain management practices and communicate flood hazards outside the NFIP. Some of these activities include:

- Acquire precise topographic data

High-precision topography is a key component to detailed mapping. Several State and local agencies are partnering on the acquisition and application of digital topography at the project level. High-precision digital topography currently exists in most flood-prone areas of the State and the interests and applications are increasing. State could invest in a regional data acquisition plan to fund the acquisition of digital topography and collect perishable data.

- Collect perishable data to support risk mapping and assessments.

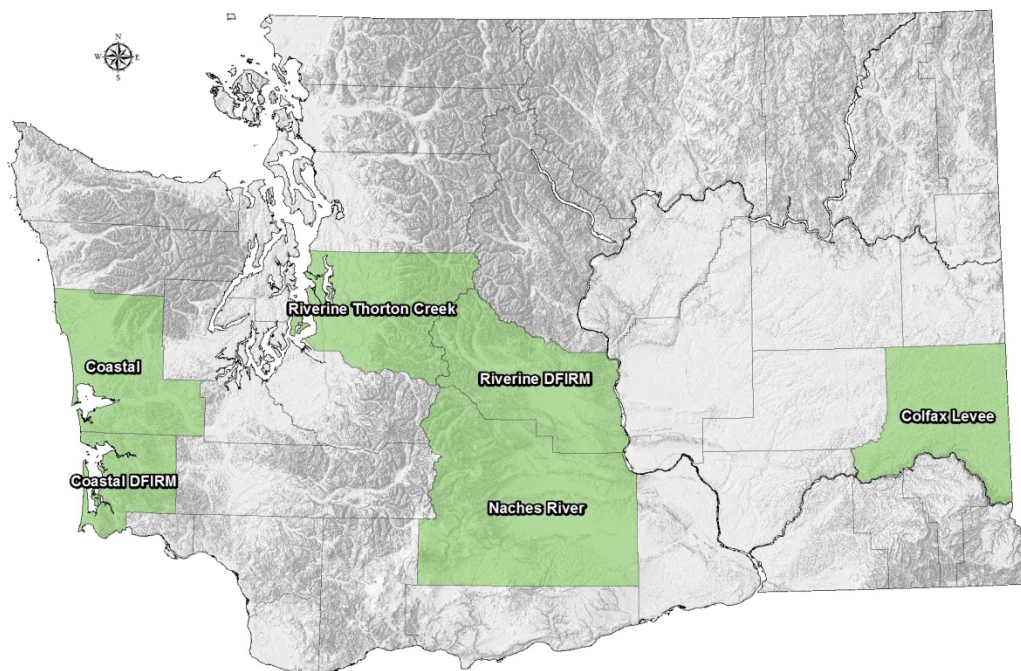
The applications of GPS and aerial photography are valuable in calibrating and refining flood risk assessments. FEMA is taking advantage of verifiable data versus results from modeled scenarios in risk assessments.

- Improve the ability to assess future conditions and built environments using FEMA programs and tools.
- Broaden flood hazard mapping to better communicate risk. Develop maps and tools focused on risk communication and mitigation. Actions could include developing or modernizing risk communication tools such as:
 - maps that include 10 & 50 year event scenarios
 - maps of areas protected by levees
 - maps of flood claims
 - channel migration & erosion area maps
 - deep & fast flowing water
 - maps of flood depths
 - maps & locations of repetitive damages

RiskMAP Projects

Project Name	STAGE	STATUS	Date
Clark Co. 2009 Washougal PAL (PMR)	De-accredit letter sent	On-Hold per levee policy	
Cowlitz Co. 2009 Castle Rock PAL (PMR)	On Hold	keeping PAL status, documentation accepted	
Cowlitz Co. 2009 Kelso PAL (PMR)	De-accredit letter sent	On-Hold per levee policy	
Cowlitz Co. 2009 Longview PAL (PMR)	De-accredit letter sent	On-Hold per levee policy	
Cowlitz Co. 2009 PAL (PMR)	De-accredit letter sent	On-Hold per levee policy	
Cowlitz Co. 2009 Woodland PAL (PMR)	De-accredit letter sent	On-Hold per levee policy	
Grays Harbor Coastal PMR FY09	Mapping	Projected Prelim	10/24/2012
King Co. CTP FY09	Mapping		3/15/2012
Kittitas Co. FY09	Mapping	Projected Prelim	6/30/2012
Yakima Co. Naches	Mapping	Projected Prelim	10/31/2014
King Co. Thorton Creek (PMR)	Mapping	Projected Prelim	
Stillaguamish	Closed	Project CANCELLED	7/18/2013
Pacific Co. 2009 Coastal/1st DFIRM	Mapping	Projected Prelim	1/3/2013
Whitman Co.	Mapping	On-Hold per levee policy	

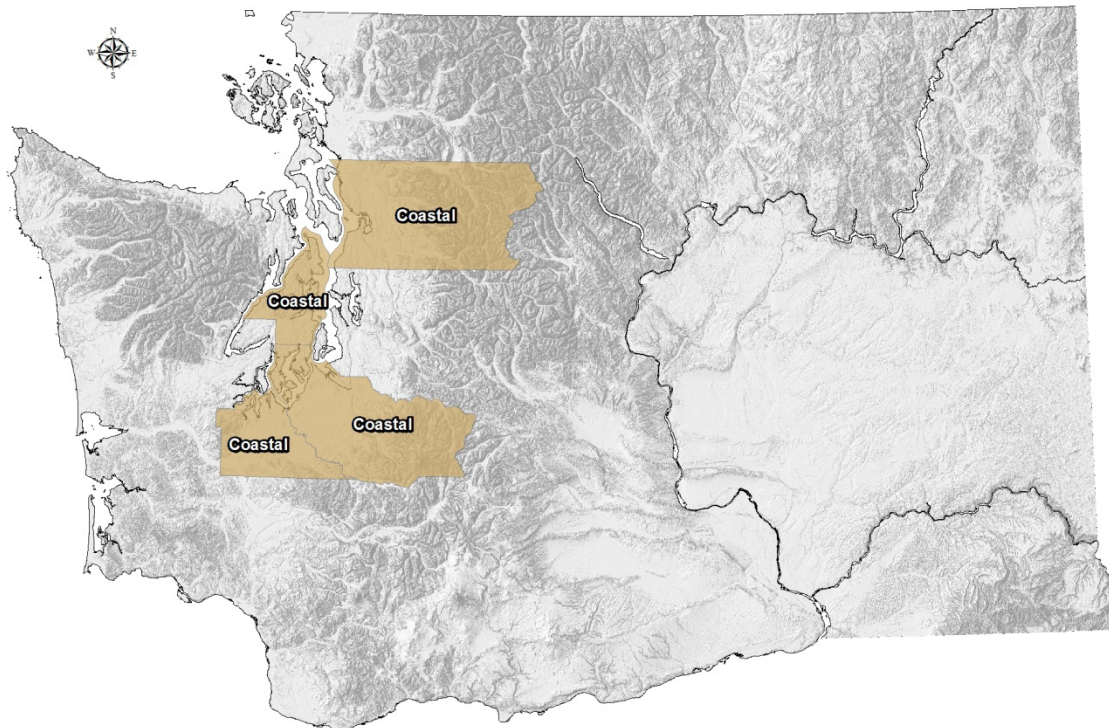
Washington State RiskMAP Projects



RiskMAP Discovery Projects

Co. Name	Project Name	Meeting Held	Status
Clark Co.	Lower Columbia-Sandy R.	TBD	on-hold
Island Co.	Coastal-Island	2/17/2011	on-hold
Kitsap Co.	Coastal-Puget Sound	4/21/2011	Proceeding
Whatcom Co.	Coastal-Puget Sound	4/6/2011	on-hold
San Juan Co.	Coastal-Puget Sound	4/6/2011	on-hold
Snohomish Co.	Coastal-Puget Sound	4/7/2011	Proceeding
Pierce Co.	Coastal-Puget Sound	4/20/2011	Proceeding
Thurston Co.	Coastal-Puget Sound	4/20/2011	Proceeding
Mason Co.	Coastal-Mason	3/4/2011	on-hold
Skagit Co.	Coastal-Skagit	2/16/2011	on-hold
Thurston Co.	Deschutes	3/3/2011	on-hold
Thurston Co.	Nisqually	5/5/2011	on-hold

Washington State Discovery Projects



FY 2011 CTP – Scope of Work

Task 1: RiskMAP Business Plan

Ecology's (DOE) business plan will identify future study sites on a watershed basis focusing on risk, available topography, physical, climatological, and methodological changes to the State's floodplains. In addition to future studies, the business plan will also focus on areas of future LiDAR acquisition, ESA implication, and enhanced risk assessments. To better understand flood risks by watershed, Ecology included in this plan a Statewide Watershed Risk Assessment Portfolio. Phase 1 of the Washington Flood Portfolio will focus on communities with coastal, levee, and other riverine hazards that have been studied in Map Mod or will be studied in RiskMAP. The Washington Flood Portfolio will be delivered as part of the Business Plan.

DOE will incorporate other studies into their Business Plan outside of flooding, to possibly include channel migration studies, coastal erosion, future development impacts, etc. DOE will coordinate with other agencies throughout the development of the business plan.

Task 2: Outreach and Training Efforts

DOE will coordinate with FEMA Region X on providing regional workshops to discuss Risk MAP and the tools which can be used to help with mapping, assessment, and planning. This training will incorporate GIS, LiDAR, and risk assessment tools, focusing on a multi-hazard approach. Workshops will be held on a local or regional level depending on location of future studies. Workshops will emphasize a multi-hazard approach and provide the necessary tools for communities to reduce risk from various hazards. DOE will provide technical assistance to communities regarding the RiskMAP program and products as needed.

Flood Study Review Meetings

DOE will assist FEMA in the coordination and attendance for all Flood Study Review Meetings in the grant cycle. This will include coordinating with the communities on attendees, meeting locations, agenda's, and presentations.

RiskMAP Meetings

DOE will coordinate with FEMA Region X to conduct Flood Study Review Sessions, Resilience Meetings, Final Community Coordination Meetings, and Public Open Houses. These RiskMAP meetings will include planners, emergency managers, floodplain managers, building officials etc. This outreach should bring together all of the necessary partners to discuss RiskMAP and communicate risk from a multi-hazard approach. This outreach will occur throughout the mapping cycle by continuous communication, training, and workshops. RiskMAP meetings will be combined regionally in areas with adjacent studies.

Flood Study Open Houses

DOE will assist FEMA in the coordination of Flood Study Open Houses in the grant cycle. This coordination includes assisting FEMA Region X with GIS and other technical support as necessary.

Levee Outreach

DOE will coordinate with FEMA Region X to provide outreach to areas affected by flood zone changes due to levee de-accreditation and the new levee policy.

Task 3: RiskMAP Program Management

DOE will assist FEMA in determining flood mapping priorities based on changes in development, addition or removal of hydraulic structures, changes in the basic science used for computations, changes in alignment of river etc. (additional guidance provided by Guidance for Validating Flood Hazard Data). In addition DOE will assist FEMA in determining the appropriate enhanced risk assessment products for each RiskMAP project if necessary.

DOE will expand their existing website to include information on RiskMAP, flood studies, risk assessment products etc. This website will be utilized by communities to track RiskMAP projects, detail upcoming meetings, and available risk assessment tools for outreach.

<http://www.ecy.wa.gov/programs/sea/floods>

Grant Administration

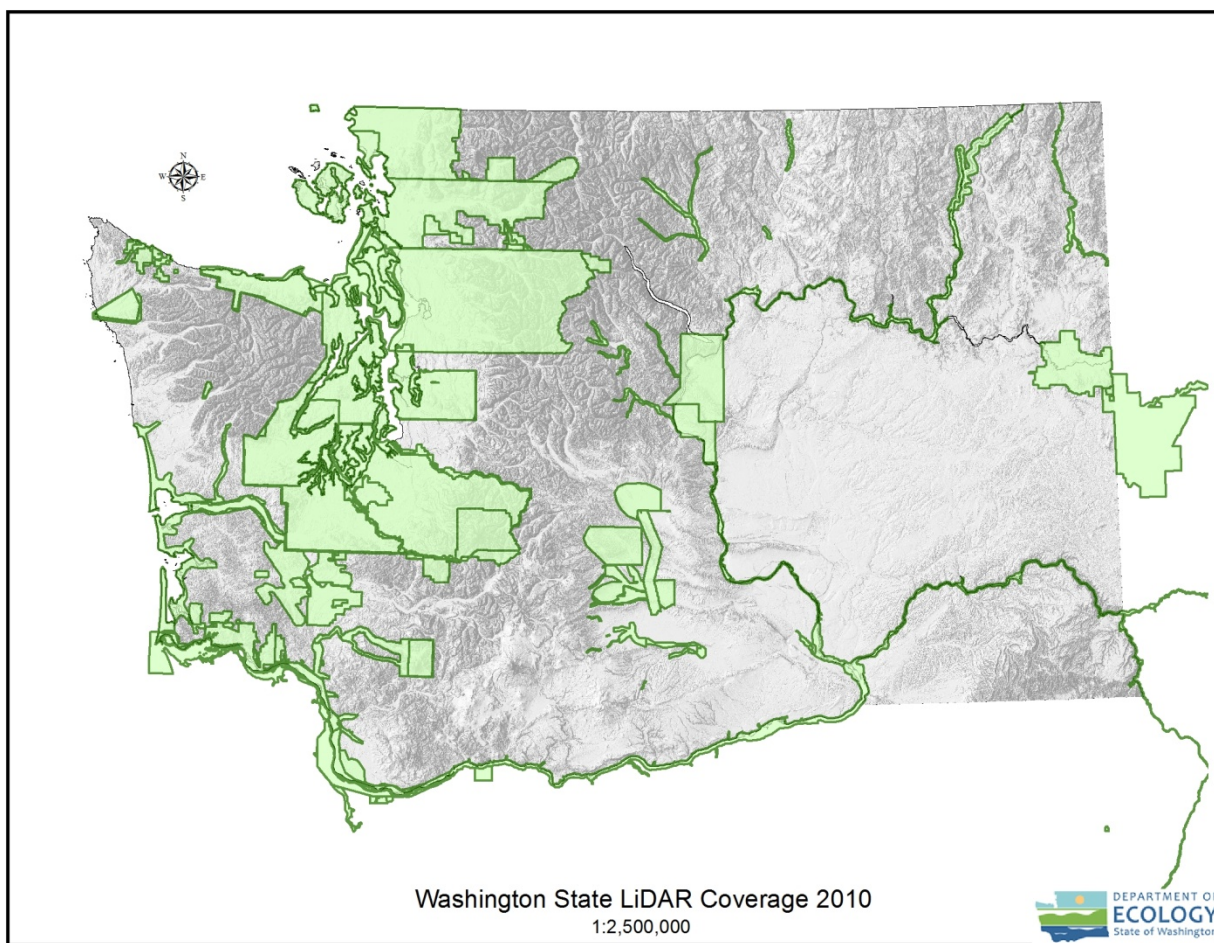
Financial reporting requirements for DOE will be in accordance with Cooperative Agreement Articles V and VI. Status reports will be submitted on a quarterly basis in accordance with the financial reporting submittals. These reports will include a summary of the work as outlined in the SSF-B Project Quarterly Report. Included in this summary should be a description of work completed, a description of work yet to be completed, and a timeline and final date for completion of remaining work. This summary should not only include mapping progress, but progress on training, outreach, and other projects within Risk MAP.

IV. LiDAR: Best Available Topography

Washington State is a leader in the development of new topography; primarily high-resolution digital topography or LIDAR (Light Detection and Ranging). Most of this data is in low-lying flood hazard areas. Ecology plans to use this collection of LiDAR data as best available topography in flood map revisions and redelineation. The data resides in the public domain with distribution mechanisms in place at the Puget Sound LiDAR Consortium web portal <http://pugetsoundlidar.ess.washington.edu/index.html>.

FY 2011 LiDAR data collection plan

Co.	Description	Source
Jefferson/Clallam	Coastal areas from Port Townsend to Elwha R. Riverine areas focusing on Elwha R.	New LIDAR data acquisition scheduled for fall/early winter 2011 flights.
Grays Harbor	Lower Chehalis R. from Wynoochee R. to Thurston Co. border.	New LIDAR data acquisition scheduled for fall/early winter 2011 flights.



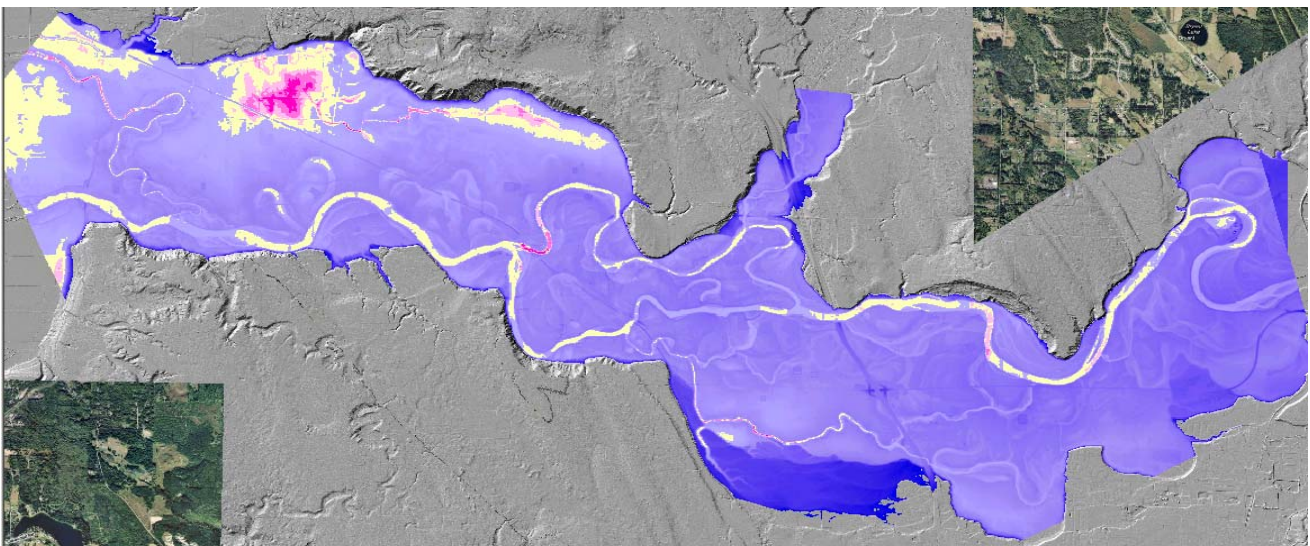
V. Washington State Projects

EPA Channel Migration Zone Assessment Project

As the Map Modernization Program concluded and RiskMAP is launched, FEMA seeks to work with all stakeholders to identify and assess risk aspects pertaining to multi-natural hazards in order to develop products that effectively communicate risks in a non-regulatory manner. An example of this is to include mapped channel migration zones in the risk database accompanying the digital Flood Insurance Rate Map dataset. Ecology is actively mapping Channel Migration Zones under a grant from the Environmental Protection Agency (EPA).

A summary of Ecology's CMZ project primary tasks are:

1. Generally map channel migration areas as required under the Shoreline Master Program updates for approximately 550 miles of stream.
2. Compile all existing Channel Migration Zone (CMZ) delineations and assessments within the Puget Sound Basin and assess the differences and how well they convey the changes in channel migration processes due to past land management activities and future risks.
3. Refine CMZ delineation and apply methodology based on credible science and lessons learned from task 1 and feedback from meetings.
4. Update CMZ guidance documents
5. Host public meetings around Puget Sound Basin to communicate the results

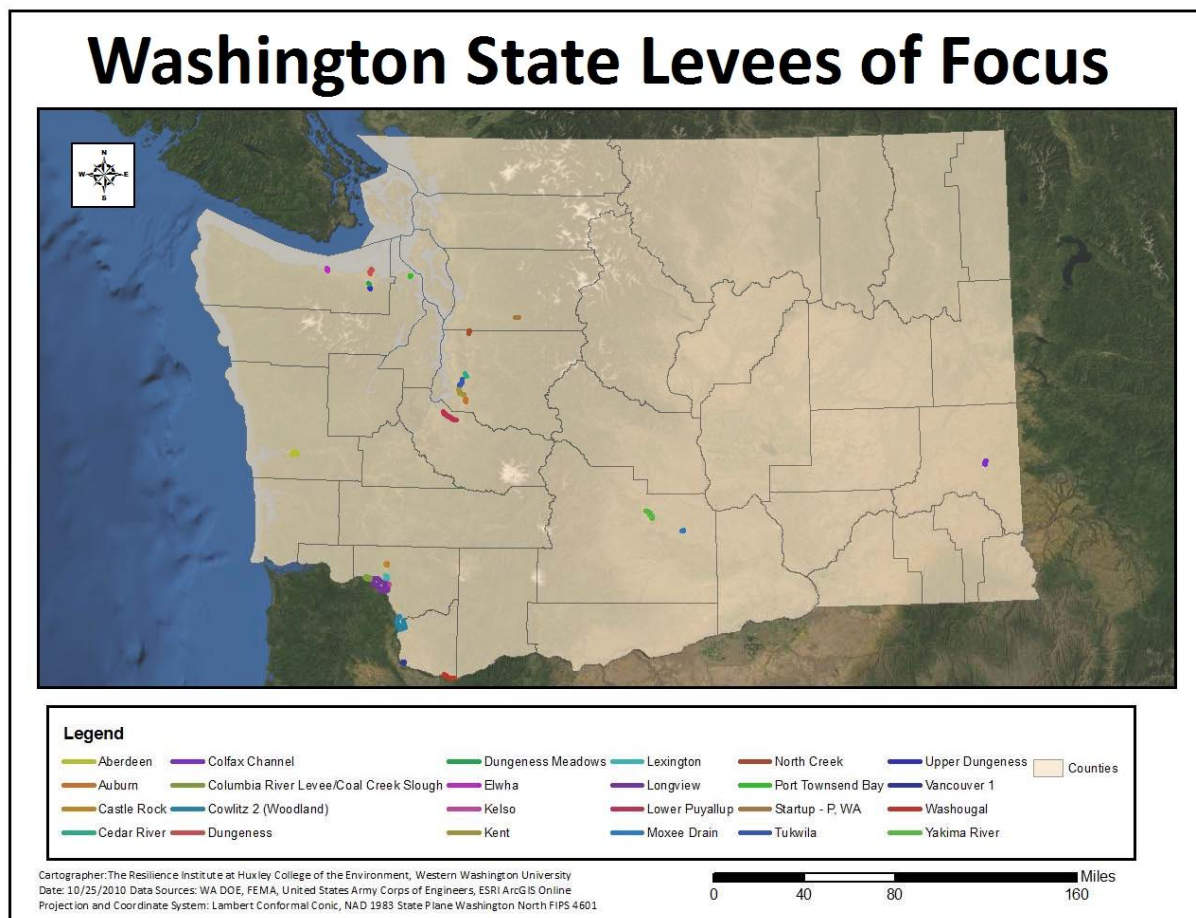


Washington Statewide Levee Inventory

The Statewide Levee Inventory and Flood Protection Study were conducted to better understand the status of levees in Washington in two parts. The first part, consisting of a report, summarizes current levee policies and practices. A second part of the study is a statewide inventory of current levees and their protection status. The statewide inventory was delivered separately as a geospatial database and set of state and county maps.

The report discusses the requirements, processes, and costs associated with certification and subsequent accreditation of levees. The report also explains some of the key challenges levee owners have in complying with regulations and securing funding for levee maintenance, improvements, and certification. The report highlights several case studies to illustrate these issues. The report includes a discussion about alternatives to levees, and concludes with a list of next steps that may support flood damage reduction in Washington State.

Any discussion of levee accreditation should include flood risk and public safety. The 100-year standard may be woefully insufficient in some areas (such as highly urbanized environments) and perhaps overly protective in others (such as agricultural lands, undeveloped land, etc), thus FEMA accreditation should include risk and economic analysis.



Washington Statewide Watershed Risk Assessment

Introduction

This Risk Assessment is a product Ecology's RiskMAP Business planning process. Ecology heavily engages in digital and spatial platforms to assess flood hazards that provide instant quantitative information spatially across the state with dynamic capabilities to assess evolving risks. The purpose of this assessment is to establish a statewide risk-based evaluation by watershed to be used as a foundation for future planning and sequencing efforts. The assessment was developed and delivered in a digital report with searchable tables and a GIS geodatabase with links to tables for evaluating attribute data and database-driven mapping capabilities.

Risk Assessment Process

FEMA provided the spatial datasets used by FEMA headquarters and Regional offices used for the Coordinated Needs Management Strategy (CNMS). The CNMS spatial data for Washington is not complete and Ecology could not support the validation of streams in the database and determined to generate this assessment based on factors that could be validated, and spatially represented by watershed. The remaining spatial data from FEMA was examined for quality and accuracy. Some datasets were slightly modified to accommodate for errors and data gaps.

Risk Assessment Factors

Three risk assessment factors were developed and assigned to FEMA's Federal HUC8 level watersheds:

- Population Density 60%
- NFIP Policies & Claims 30%
- Floodplain Area 10%

FEMA provided total population values by watershed from Federal census data. Ecology recalculated total population values into population density values by watershed area and generated an attribute in the HUC8 GIS data table representing population density.

FEMA also provided NFIP policies and claims data in a spatial point file feature with attribute tables. Policies and claims point features were spatially joined to the HUC8 watershed data table as an attribute of total policies and claims per watershed.

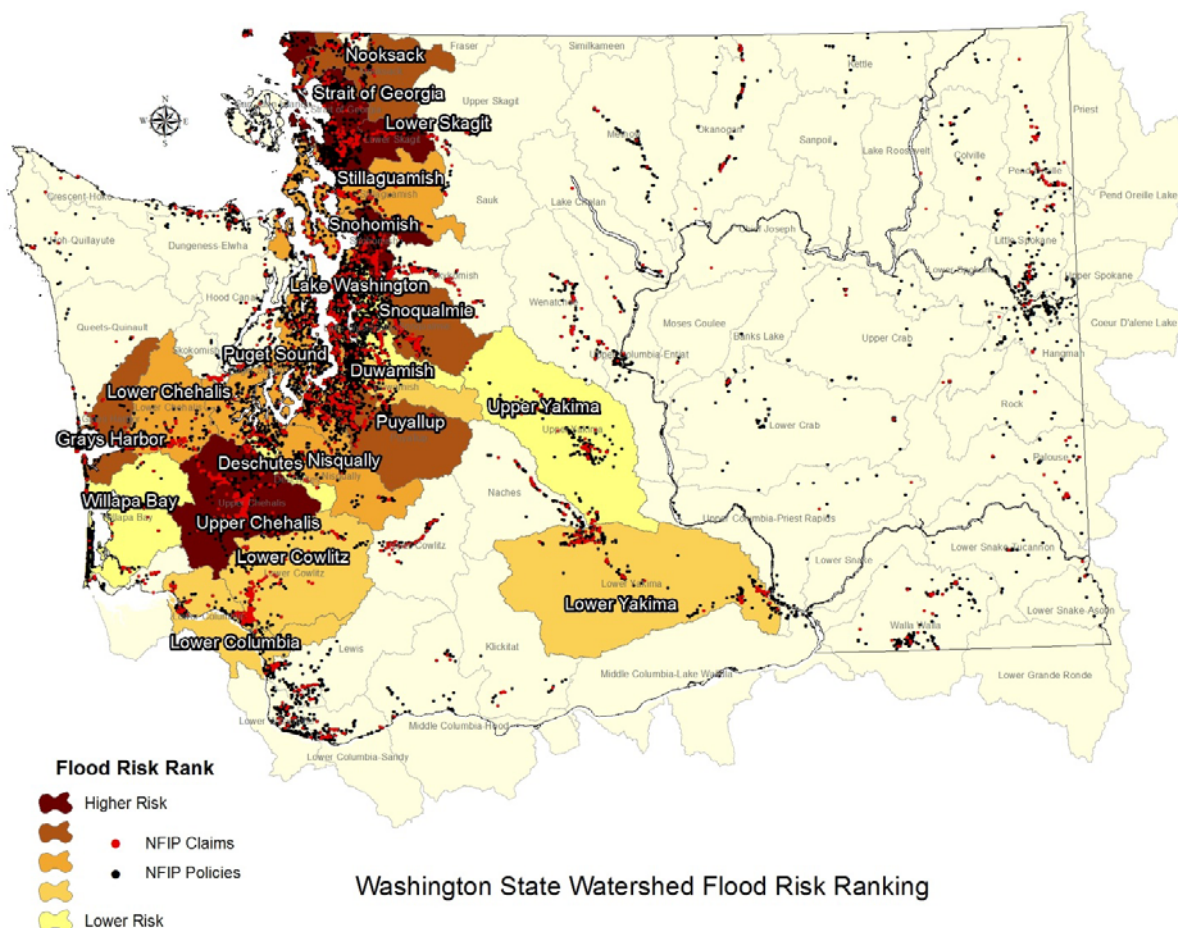
Ecology generated the floodplain area attribute by intersecting FEMA's Q3 data with the HUC8 watershed spatial data and calculated the percent floodplain to watershed area in the attribute table.

Watershed Ranking

Total numbers and areas were avoided and a weighted scheme was developed to emphasize risk factors with greater influence on risk concentrations. Population density was assigned a sixty percent weight as the predominate risk factor. NFIP policies and claims were allocated thirty percent weighted value and floodplain area given ten percent of the scheme.

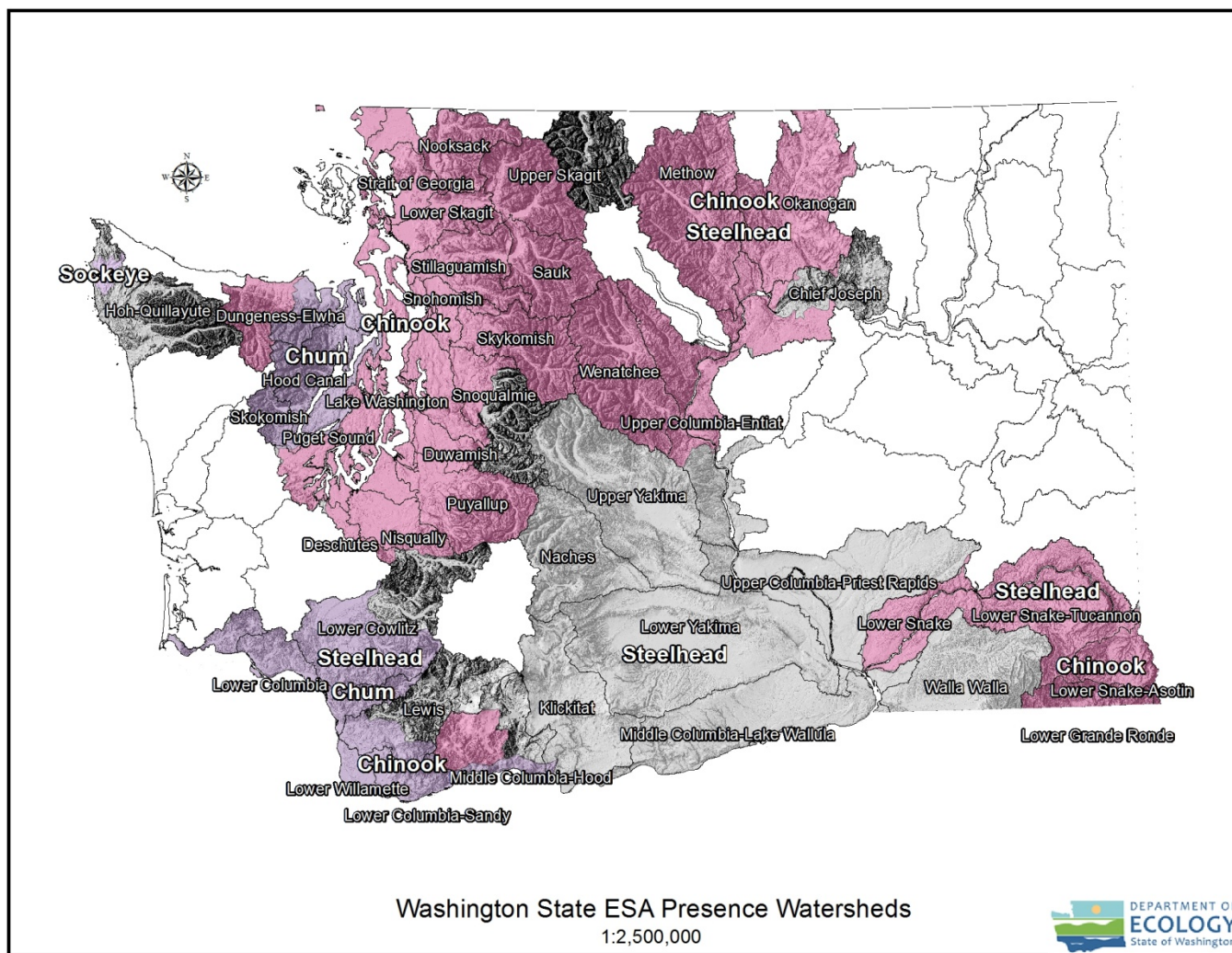
The weighted method was removed and equal quantities were ranked to evaluate the sensitivity if the weighted approach. All of the top twenty watersheds remained in the top twenty with emphasis given to large unpopulated floodplain deltas and understated the value of population density as a predominate risk factor.

All three weighted factors were sorted in ascending order and assigned a value from one to sixty seven with the highest risk watersheds assigned the lowest values. The three rankings were summed equally and again assigned a rank value with the highest risk watersheds assigned the lowest values. The resulting assessment assigned a value to sixty seven of the State's seventy one watersheds. The top twenty at-risk watersheds are mapped below. A full assessment and portfolio were delivered to FEMA Region X as a separate report and database.



RiskMAP and the Endangered Species Act

FEMA updated the national algorithm to include a field that indicates if the area coincides with listed endangered species in Washington and Oregon. The dataset allows Region X to view this information in GIS as part of the Region's study prioritization and during the Discovery effort. Ecology developed a Statewide Watershed Risk Assessment that reflects prioritization for studies on a watershed basis based on risk, available topography, and identifies the presence of listed endangered species by HUC8 watershed as mapped below:



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WA Ecology Flood Web Site

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